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SITE INDEX CURVES FOR PLANTATION BLACK WALNUT

CENTRAL STATES REGION

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Reliable information on the development of plantations of trees and particularly for hardwoods is greatly needed. Among the species used in early pioneer plantings in the Middle West, black walnut is very prominent. Because of its very high value and genuine intrinsic worth, this species has been studied in detail. Although it occurred originally as huge, scattered individuals in half open stands, and particularly on fertile, moist, alluvial lands, planters frequently have established it in pure stands, at close spacings, on uplands and edaphically out of its proper environment.

In order to determine the height growth for black walnut planted in pure stands, data from some 188 plots have been assembled. From these data the attached site index or site quality curves were prepared. A curve of average dominant height over age was drawn and used in the construction of a percentage alinement chart, following the technic of Reineke.[1] The age of classification was placed arbitrarily at 50 years.

The range of height growth of black walnut in pure plantations in the Central States Region is broad enough to permit the identification of five 10-foot site quality or index classes at 50 years. Eighty feet at fifty years is the best development to be expected ordinarily. Outside of this region, very limited areas in the Cumberland mountains at the bases of slopes showed better growth which had a site index of 90 to 95 feet. It seems probable that occasional better site qualities may appear in the future; but the likelihood of their occurrence on the open prairie lands is very slight. Farther west, in eastern Nebraska and Kansas, poor development is to be expected because of lower rainfall, exposure and dessication. Lower site qualities than those indicated by these curves probably occur under such conditions.

1/ Reineke, L. H. 1927. A modification of Bruce's Method of Preparing Timber Yield Tables. Jour. Agri. Res. Vol. 35 (9):843-855.

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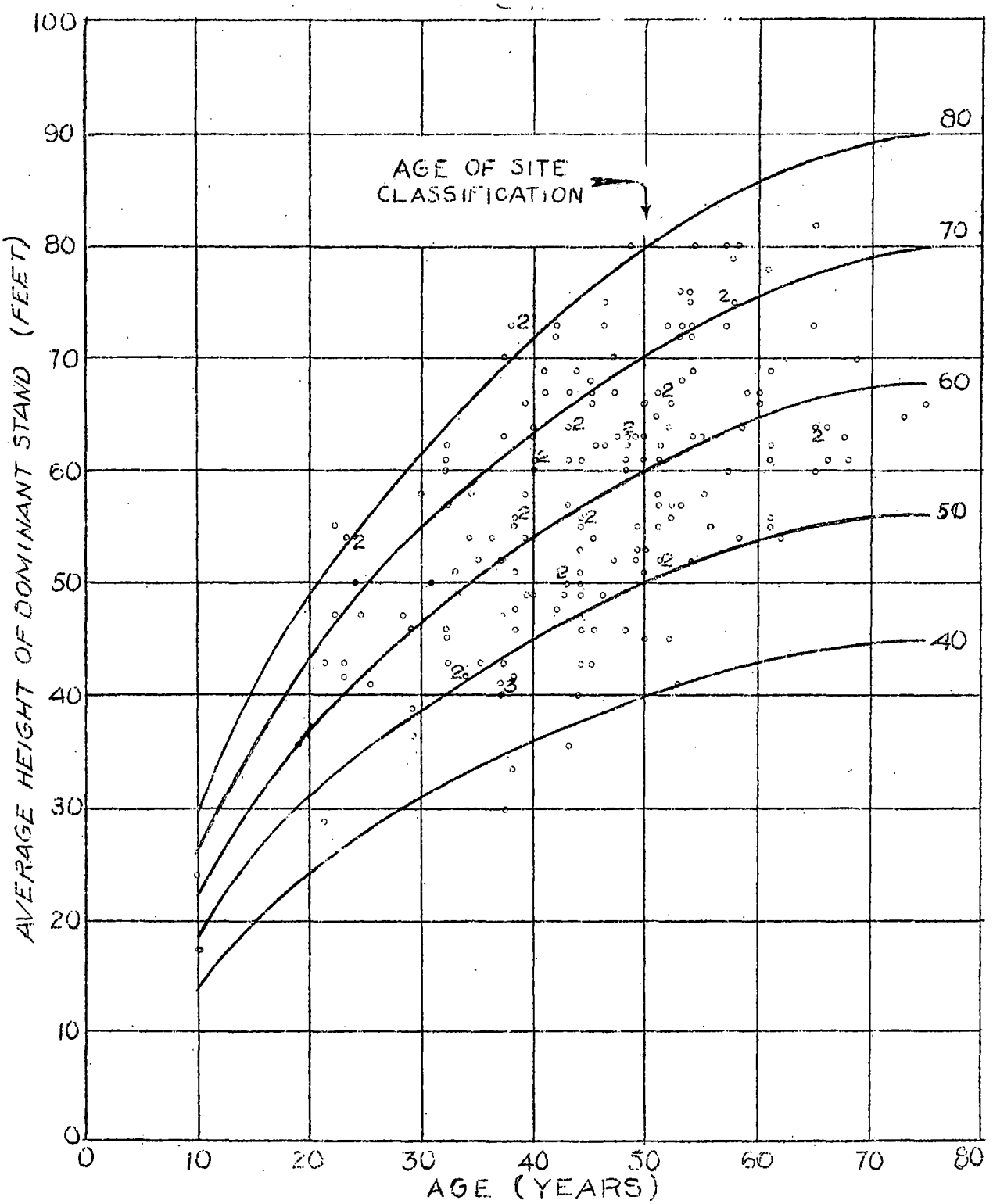
These curves may be used to determine the site quality for any given walnut plantation. To do this, only the age and average dominant height of the plantation must be determined. By plotting in this point, the planting is readily identified with the closest of the several curves. Furthermore, the site index of the plantation in question may be easily approximated. For example, a 35-year-old planting with an average dominant height of 45 feet would locate about four tenths of the way between the 50 and 60 foot site index curves. By projection to 50 years, using the 50 foot site curve as a guide, the planting will be found to be about 53 feet high, its site index. These curves can be used with reasonable assurance to predict the growth of black walnut on similar soils.

This is the first of several releases which may be made prior to the appearance of a complete report on the performance of this species in plantations in this region.

PLANTATION BLACK WALNUT

CENTRAL STATES REGION



DISTRIBUTION OF YIELD PLOTS WITH RESPECT TO HEIGHT CURVES BY SITE INDEX CLASSES